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NOTES ON RHABDOPTERUS IN THE UNITED STATES (COLEOPTERA, CHRYSOMELIDAE).

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Records of injury to cultivated plants in the eastern half of the United States by subspherical, brownish, or blackish-bronzed, shining eumolpine leaf beetles have been made under the name *Rhabdopterus picipes* but appear to include several natural species which have been confused as one. These apparently distinct species are very similar and their proper classification has been prevented by the poor and scanty samples which have been accumulated and by a false assumption that our fauna is well known. The notes here offered result from a tedious study of some 400 specimens assembled in the National Collection representing many localities from Prince Edward Island and Alberta to the Everglades and the Rio Grande. These specimens are, for the most part, very unsatisfactory for study, being discolored, decayed, and broken or distorted, owing to the very crude, old-standard procedure of allowing the beetles to dry slowly. Many of them are immature and soft, suggesting that they mature and harden slowly while feeding on the leaves of their host plant, and in such immature male samples the aedeagus has become shriveled and distorted in drying. In great contrast to these are a few samples collected and received in alcohol which have yielded excellent preparations of the aedeagus of even the softest teneral males while the mature and fully hardened individuals have made very superior specimens with no discoloration or visceral decay. New alcoholic samples from any brood of these beetles throughout their wide habitat are earnestly solicited to supplement or replace the unsatisfactory samples. Numerous lots consist only of female beetles, but about 130 males have been dissected to display the form of the apex of the aedeagus. Such dissection is now, in the writer's opinion, almost a routine duty, but is tedious, slow, and

discouraging with old specimens in contrast to the satisfaction to be obtained from well-preserved alcoholic samples. The differences in the male genitalia thus displayed appear to indicate units of population which we must recognize as species and which extend over wide areas. The results obtained, therefore, are quite different from those hitherto obtained from the study of external characters, but our area is still very poorly sampled.

The note by Jones 1941 (*Jour. Econ. Ent.*, 34: 321) includes the views then held by the present writer, but no males were among the four dried, distorted, and broken specimens which were unfortunately then misidentified as *Rhabdopterus praetextus* (Say). Other dried samples received later from the same locality contained immature males which, when dissected, disclosed the shriveled and distorted genitalic form unlike that previously known in *Rhabdopterus* but resembling that in certain Sonoran species of *Colaspis*. Additional males of this new form were then recognized by dissection of old samples dating back to Hoffman in Iowa, 1872, Schwarz at Detroit, about 1874, and Riley in Missouri and Belfrage in Texas before 1880. In the record by Jones 1941 the name *Rhabdopterus praetextus* as applied by myself to the beetles attacking grape in Missouri now requires correction to read *R. deceptor*, which is described below as new, and the cranberry rootworm in New Jersey may prove to be *R. picipes* instead of *R. praetextus* if good samples become available. Taxonomists who have discussed these beetles have confused species and misapplied names in their discussion. Hubbard and Schwarz 1878 (*Amer. Phil. Soc. Proc.*, 17: 660) record *Colaspis praetexta* Say from Detroit, but their specimens now before me are *deceptor*. Hamilton 1890 (*Canad. Ent.*, 22: 240), using the combination *Tymnes chrysis*, seems to have misidentified *Tymnes tricolor* (F.) as *Colaspis chrysis* Oliv., which had not then been rediscovered, and was further confused by conflicts in the descriptions, so that the ideas he expresses under the names *picipes* and *praetextus* are not clear. Horn 1892 did not recognize *picipes* correctly but seems to have applied that name to samples of *praetextus*, which name he suppressed as a synonym of *picipes*, and Bowditch 1921 appears to have redescribed *picipes* under the new name *blatchleyi*, being misled by Horn's statements.

Geographically our species seem to occupy areas as follows: Coastal lowlands from the Mississippi to Rhode Island, *picipes*; southern Florida, *bowditchi*; inland region, Quebec to Rio Grande reaching Philadelphia, Washington, D. C., and Florida, *praetextus*; inland region, Alberta to Texas and New York, *deceptor*; New

Hampshire and Massachusetts, *spiculatus*; Brownsville, Tex., *weisei*.

The generic distinction between *Colaspis* Fabricius 1801 and *Rhabdopterus* Lefevre 1885, the prosternum narrow in the one and broad in the other, is not useful. The genotype of *Rhabdopterus* must be one of the four Colombian species originally placed under the preoccupied generic name *Rhabdophorus* Lefevre 1878, but of these only the female of *caliginosus* is now available, and it seems doubtful if *picipes* is very closely related to that species. A very close relationship is evident, however, among several of our species, including *picipes*, in which the shape of the apex of the aedeagus differs greatly from that in any species of *Colaspis* observed by the writer, whereas in another species, *deceptor*, externally similar to these, the form of the aedeagus is very different. An aedeagal shape very similar to that of the latter is found, however, in the type specimen of *Colaspis viriditinctus* Schaeffer 1920 from Douglas, Ariz., which species is now represented by samples from Phoenix, Tempe, and Nogales, Ariz., and which is not a variety of *C. brunnea* as originally believed.

The genotype of *Colaspis* is *Chrysomela flavicornis* F. 1787, the type locality of which is Cayenne. Several species from this region agree with the vague original description, and the literature on this species does not allow the writer to determine which of the species is *flavicornis*, nor whether this name is correctly suppressed as a synonym of *occidentalis* L. 1758, the type of which had been collected by Rolander, probably at Surinam. In one of these species the aedeagus is shining brown and rather strongly sclerotized below in the median third of its length, while in another the concave under surface is conspicuously white and membranous in the same area in strong contrast to the very heavily sclerotized sides, apex, and base. Specific modifications of this nature occur in North American species of *Colaspis*, but until they can be elucidated, or until *Rhabdopterus* can be recombined with *Colaspis* on other grounds, our forms may remain under the familiar generic name *Rhabdopterus* Lefevre 1885. Forty American species have been cataloged by Clavareau 1914 (in Junk, *Coleopt. Cat.*, pt. 59, p. 38), only one of which, *picipes*, with *praetexta* in synonymy, was recognized as from north of Mexico. Ten more species were described by Bowditch 1921 (*The Entomologist*, 54: 216, 234-236, 253-255), one of which, *blatchleyi*, may be *picipes*. In our samples from north of Mexico six species are indicated by the forms of the aedeagal apices as shown in figure 1. Characters for identification of the females

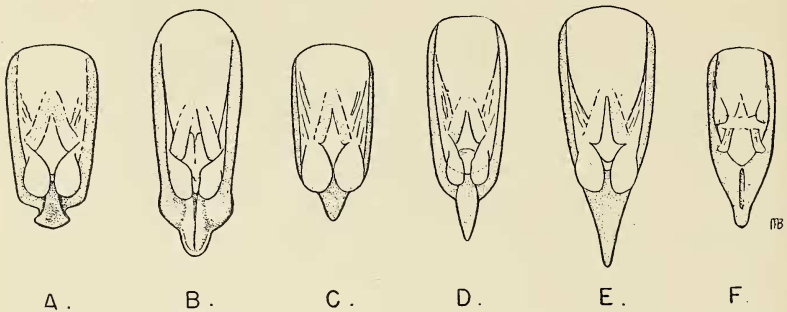


FIG. 1. Aedeagi of: A, *Rhabdopterus picipes* (Oliv.); B, *R. bowditchi* Barber, type; C, *R. praetextus* (Say); D, *R. spiculatus* Barber, type; E, *R. deceptor* Barber, type; F, *R. weisei* (Schaeffer), type (part of armature of internal sac extruded). (Drawings by Mary F. Benson.)

have not been found, but such specimens should be identifiable if kept with the males in lots of which they are a part. Females unassociated with males are left unidentified. The males of six species now known in the United States are distinguished as follows:

KEY TO SPECIES OF RHABDOPTERUS NORTH OF MEXICO

1. Aedeagus nearly oblong, quadrate in orificial aspect, its sides only slightly convergent, its apex abruptly, sinuately truncate but with a short, median, dentiform process (fig. 1, A to D) 2
 - Aedeagus more tapering in orificial aspect (except in *weisei*), its apex not sinuately truncate but produced into an acuminate, somewhat flattened process (fig. 1, E, F) 5
- 2 (1). Aedeagus with apical margin longer and very heavily sclerotized, the dentiform process short, broad, and strongly convex or carinate above, the convexity extending basally as a ridge to the membranous orifice and separated on each side from the conspicuously convex lateral areas by a strong sulcus; legs brown . . . 3
 - Aedeagus with apical sclerotized margin narrow, the dentiform process rounded or tapering towards tip; antennae and legs whitish, male hind tibiae with lower carina obsolescent 4
- 3 (2). Body more robust, the metallic reflections faint bronzed or greenish; hind tibia of male strongly carinate and

dilated inwardly in apical third; dentiform process of aedeagus rather broad and usually strongly constricted at base, its apex subtruncate, with dorsal carina flattened (fig. 1, A, *picipes* s. str.), or broader, less constricted, and with carina narrow (var. ? *blatchleyi* Bowd.) *R. picipes* (Oliv.)

Body more elongate-oval, the metallic reflections often strong; hind tibia of male narrower, with inner carina only slightly developed at apical third and feebly emarginate in apical third; dentiform process of aedeagus narrow, parallel-sided, rounded, with strong, acute dorsal carina (fig. 1, B). Subtropical Florida.

R. bowditchi n. sp.

4 (2). Apical tooth of aedeagus short, rounded (fig. 1, C). Quebec to Brownsville, Tex. . . . *R. praetextus* (Say)

Apical tooth of aedeagus long, acuminate, and bent upward (fig. 1, D). Massachusetts, New Hampshire and Maine *R. spiculatus* n. sp.

5 (1). Larger (5-6 mm.), dark brown or blackish, often with strong greenish reflections especially at margins; dorsal sculpture coarse; legs and antennae pale, the hind tibia of male with inner margin concave but carinate and feebly produced near apex; aedeagus strongly tapering in orificial aspect, its apex narrowly produced and acuminate (fig. 1, E), its lower surface membranous. Iowa; Alberta to New York and Texas.

R. deceptor n. sp.

Smaller (4½ mm.), brown, without greenish luster; dorsal punctures larger, deeper, and more remote, with the interstices more convex; legs brown, comparatively short and stout, the tibial apices more enlarged, the hind tibia (male) neither arcuate nor carinate on inner surface and the basal tarsal joints only feebly enlarged; aedeagus sclerotized beneath and less tapered, broad and ogival behind the orifice, the apex slightly produced, curved upward and rounded (male holotype). Brownsville, Tex. *R. weisei* (Schaeffer)

Rhabdopterus picipes (Oliv.).

Colaspis picipes Oliv. 1808, Entomologie, 6: 886.

Chalcophana picipes (Oliv.) Chevrolat 1837, Dejean Cat. revised, p. 432.

Rhabdopterus picipes (Oliv.) Lefevre 1885, Mem. Soc. Liège, (2) 9: 47.

? *Rhabdopterus blatchleyi* Bowditch 1921, The Entomologist, 54: 216, 234.

This species was described from a sample collected in Carolina by Bosc, who had spent 2 years about 1798 at or near Charleston. Samples from this locality are not now available. Northern and western forms in which the legs and antennae are almost white in life have long been misidentified as *picipes* following Horn 1892 (Amer. Ent. Soc. Trans., 19: 226). Horn seems to have misled Bowditch into his proposal of the name *blatchleyi* for a specimen from Charleston and others, including the undesignated type, from Florida. Southern specimens are usually larger, darker, and rather strongly metallic in contrast to the somewhat smaller, feebly metallic brown specimens from the Chesapeake region. Under the name *picipes* are recorded observations on a pest of cranberry in New Jersey and of blueberry in North Carolina, and although suitable samples representing these reports are not available the name is probably correctly applied.

The variational and geographical limits of this species cannot be defined from the inadequate, fortuitously assembled samples now available, but it appears that *picipes* occupies the coastal lowlands from the Mississippi Delta to Rhode Island and is in contact along the inland margin of its area with the pale-legged, smaller species *praetextus* (Say), both species being found at Philadelphia and Washington, and in the South.

The five male and five female types of *blatchleyi*, which Bowditch 1921 suspected might be the form originally described as *picipes*, have not been restudied. They were collected at Dunedin, Fla., by Dr. Blatchley, the date being not recorded. Another male from this type locality and collector is dated July 5, 1915, and is believed to represent this form, but it differs from typical *picipes* only in the broad, very slightly constricted and narrowly carinate apex of the aedeagus. A similar male was collected at Tampa, April 12, 1876, by E. A. Schwarz, who listed it (Amer. Phil. Soc. Proc., 17: 457, 1878) as "*Colaspis praetexta* Say, not rare," applying this name to the several forms herein distinguished in the material from Florida. Another specimen of this form from Dr. Blatchley is labeled Royal Palm Park, April 6, 1925, but still other males from this place differ in the modification of the hind tibiae and seem to represent a distinct species (*bowditchi*). About 80 specimens before me are believed to be *picipes*, 25 of them by the form of the displayed aedeagus.

***Rhabdopterus bowditchi* n. sp.**

This form seems to be the one discussed without a name by Bowditch 1921 (*The Entomologist*, 54: 235), but his specimens from Blatchley have not been seen. The slight carina at the apical third of the hind tibia of the male continues to the apex but is so reduced that the inner margin is concave or emarginate in the apical third of its length. The aedeagus somewhat resembles that in *blatchleyi*, but the apical lobe is narrow, not constricted, and rounded at the apex (fig. 1, B). Eight males are from the following five localities: Paradise Key (Royal Palm Park), type, collected by the writer, March 10, 1919; Biscayne, May 1887, E. A. Schwarz; Haulover (10 miles north of Titusville), March 1875, E. A. Schwarz; Glades County, February 1930; and Martin County, March 1930. With these are associated 15 females from the same region, one of them having been submitted as injurious to avocado. Their metallic luster ranges from green to purple.

Type and seven paratypes, United States National Museum, Catalog No. 26439.

***Rhabdopterus praetextus* (Say).**

Colaspis praetexta Say 1824, *Acad. Nat. Sci. Phila. Proc.*, 3: 442.

Rhabdopterus picipes auct. (not Oliv.).

Rhabdopterus praetexta (Say) Barber, in Jones 1941, *Jour. Econ. Ent.*, 34: 321 (part).

The whitish antennae and palpi, pale legs, and rather small size indicated in the original description apply better to the smaller and more widely dispersed of our confused forms. The statement by LeConte 1859 (*Complete Writings of Thomas Say*, vol. 2, p. 211) that *praetexta* was *picipes* Oliv. appears to be the reason this species has remained unknown. The grape pest in Missouri, which the present writer misidentified from female specimens as *praetexta* and which was recorded under this name by Jones 1941 (*Jour. Econ. Ent.*, 34: 321), is not this species but is described below as *R. deceptor*. A male from Philadelphia, June 22, 1899, Geo. Greene, agrees with the original description and is selected as neotype to replace the lost type of *praetextus*. It agrees also in habitus, in the color of the appendages, and in the shape of the aedeagus with numerous males representing about 35 localities from Montreal to Florida, Lawrence, Kans., and Brownsville, Tex.

About 160 specimens, including 50 dissected males, have been

examined. An old sample in the Knab collection seems to represent a variety, perhaps peculiar to Prince Edward Island, in which the apex of the aedeagus is longer and more tapering but is not as in *Rhabdopterus spiculatus*. This sample was identified as *R. picipes* by someone who sent the 7 specimens bearing the printed labels, Joliette PEI, 7-9-00, to the late Frederick Knab.

***Rhabdopterus spiculatus* n. sp.**

The produced, elevated, spinelike apex of the aedeagus (fig. 1, D) cannot now be regarded as a mere variation, and it is hoped that better samples of this form will be obtained. The few specimens resemble *praetextus* except in this genital character and fall within the size variation in that species, from which they seem to be indistinguishable by superficial characters.

A male (type) and two females collected August 5, 1902, along the Notch Road, South Amherst, Mass., by the late F. Knab, a male and female labeled Belknap County, N. H., from the collection of W. S. Abbott, and a male collected on Big Diamond Id., Portland, Maine, July 9, 1918, by C. A. Frost.

Type and five paratypes, United States National Museum, Catalog No. 56440.

***Rhabdopterus deceptor* n. sp.**

Rhabdopterus praetexta (Say) Jones 1941, Jour. Econ. Ent., 37: 321 (Barber ident. err.).

Colaspis praetexta Say, Hubbard and Schwarz 1878, Amer. Phil. Soc. Proc., 17: 660.

Elongate oval, convex, shining, strongly punctate, piceous to black with aeneous luster above, the reflexed margins greenish, the legs and antennae pale yellow to whitish, the underside brown to piceous. Length 5-6 mm., width 2.6-3 mm.

The habitus is very similar to that of *picipes*, the legs and antennae paler yellow, the hind tibia of the male with inner margin similarly but less strongly carinately lobed before apex. The aedeagus, however, of very different form, the sides converging from about basal fourth to the attenuate apex, with only a very slight sinuation below the orifice. No satisfactory characters by which the females of *deceptor* can be distinguished from those of *praetexta* have been found, although more than 40 bear the same source labels as the male paratypes listed below. Several localities are represented by old specimens which have been "identified" as *praetexta* or as *picipes*. The selected type is a well-matured male received in

alcohol from Carl J. Drake with the statement that the species was very abundant and doing great damage to corn near Spencer, Iowa, June 18, 1941. Eight well-matured females received with this male type are nearly black above but with strong greenish reflections. The paratypes found injuring grape at Marshall, Mo., in June 1940, and June 16, 1941, are mostly immature and not well preserved.

Type and 45 male paratypes, United States National Museum, Catalog No. 56441.

Their labels supply the following distributional data: Waghorn, Alberta, July 1902, P. B. Gregson, from Knab Collection—1 ♂, 1 ♀; Winnipeg, Manitoba, from Wickham Collection—1 ♂, 1 ♀; Montana (probably Morrison Collection)—1 ♂; Volga, S. Dak., Truman, from Wickham Collection—1 ♂; Kenoche, Nebr., from Wickham Collection—1 ♂; Iowa, Hoffman, 1872, from Riley Collection—2 ♂, 3 ♀; Iowa City, Iowa, July 1921, Wickham—2 ♂, 4 ♀; Lake Okoboji, Iowa, June 1916, Buchanan—2 ♂, 4 ♀; Spencer, Iowa, June 18, 1941, injuring corn, C. J. Drake (type)—1 ♂, 8 ♀; Onaga, Kans., June 4, 1901, Crevecoeur, from Knab Collection—1 ♂, 3 ♀; Topeka, Kans., Popenoe—2 ♂, 3 ♀; Balwin, Kans., June 2, 1906, J. C. Bridwell, from Moznette Collection—1 ♂; Kansas, Collection Ashton—3 ♂; Marshall, Mo., grape, June 25, 1940, June 1941, G. D. Jones—10 ♂, 6 ♀; C. Mo., June 1887, C. V. Riley—1 ♂, 2 ♀; Dallas, Tex., April, May, June, 1907, 1909, Bishopp, Pratt, Schwarz—4 ♂, 4 ♀; Victoria, Tex., April 23, 1912—1 ♂; Columbus, Tex., May, June, E. A. Schwarz—1 ♂, 2 ♀; Tallulah, La., June 15, 1910, R. A. Cushman—1 ♂; Detroit, Mich., about 1874, Hubbard and Schwartz Collection—1 ♂, 2 ♀; Midland County, Mich., June, August 1939, 1940, R. R. Dreisbach—2 ♂, 2 ♀; Edgebrook, Ill., August 3, 1914, from Moznette Collection—2 ♂, 1 ♀; Porter, Ind., June 22, 1937, A. W. Trippel—1 ♂; New York, Ashton Collection—3 ♂; N. J. (perhaps mislabeled) in Schaeffer Collection—1 ♂.

Rhabdopterus weisei (Schaeffer) new combination.

Colaspis weisei Schaeffer 1920 (Brooklyn Ent. Soc. Bul., 15: 117), a substitute name for *C. subaenea* Schaeffer 1920 (N. Y. Ent. Soc. Jour., 27: 328) not Jacoby 1890 (Biol. Cent.-Amer. Coleopt., vol. 6, pt. 1, suppl. p. 224), is applied only to the unique male type in the Schaeffer Collection labeled Brownsville, Tex. It closely resembles specimens of *Rhabdopterus praetextus* from the same place, which Schaeffer pinned into his series under the name *R. picipes* or placed without study in the corner of his box, but it

differs superficially from these in the stouter middle and hind tibiae and less enlarged basal tarsal joints. Its aedeagus, however, resembles that of *R. deceptor* but is more nearly parallel sided, the attenuate apex somewhat less attenuate, flattened with a median impressed line, and the undersurface is sclerotized.

Notes on Heliathiinae—Relationship of *Heliosea fasciata* Hy. Edw. and *Heliosea pictipennis* Grote.—In April 1941, I had the good fortune to visit the deserts of southern California during a season of unusual bloom. Collecting at Llano (Los Angeles Co.) in the Mohave Desert with Mrs. McElvare and Mr. and Mrs. John L. Sperry of Riverside, we found many specimens of *H. fasciata* and *H. pictipennis* on the flowers of the desert dandelion, *Malacothrix californica* DC., which was widespread at that season. The sky was heavily overcast and a surprisingly cold wind blew down from the snow covered San Gabriel Mountains. (The weather was said to be unseasonable.) Most of the flowers were closed and it was often necessary to push open the petals to find the sun loving moths, sluggish from cold, sitting inside. In this way we took a number in copulation, paired as follows:

♂ *fasciata* with ♀ *fasciata*—3 ♂ *pictipennis* with ♀ *pictipennis*—5
 ♂ “ “ ♀ *pictipennis*—6 ♂ “ “ ♀ *fasciata*—6

At the time it was not practicable to bring them east to breed. It would be interesting, if some western entomologist would try to breed some pairs and cross pairs and see what resulted. It seems likely that the “fawn drab” *fasciata* is a color form of the “vinous purple” *pictipennis* and not a separate species as currently rated.—ROWLAND R. McELVARE, Port Washington, Long Island, N. Y.

***Pseudomasaris* in Wyoming and Nebraska (Hymenoptera, Vespidae).**—The following records, apparently the first for masarid wasps in these two states, were noted in the collections of the Department of Entomology at the University of Nebraska. *Pseudomasaris vespoides* (Cresson): WYOMING: Douglas, Converse Co. (C. E. Mickel); Laramie, Albany Co. NEBRASKA: War Bonnet Creek, Sioux Co. (M. A. Carriker). *Pseudomasaris zonalis* (Cresson): NEBRASKA: War Bonnet Creek, Sioux Co. (M. Cary).—J. BEQUAERT, Museum of Comparative Zoölogy, Cambridge, Mass.